

A DESCRIPTION OF THE LARVAE OF *AMBYSTOMA*
CINGULATUM BISHOPI GOIN, INCLUDING AN
EXTENSION OF THE RANGE

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The reticulated salamander, *Ambystoma cingulatum* Cope, has recently been found to be considerably more abundant and widespread than hitherto suspected. The larva, whose pattern and coloration is strikingly different from that of the adult, has also been recently brought to light. Further data on distribution and larval forms are presented herein.

There is little published information on this species. Orton (1942) first described the larva of *A. cingulatum* from three small preserved specimens from northwest Florida. Her identification was made by a process of elimination. Although the pattern description is good, no color information is presented since the specimens had evidently been bleached by the preservative. Goin (1950) obtained enough adult material to describe the specimens from the western part of the range as a new subspecies, *A. cingulatum bishopi*. Mecham and Hellman (1952: 129) described from life the larva of the eastern race, *A. cingulatum cingulatum*.

The writer is indebted to Mr. Robert E. Hellman for his careful criticism and advice concerning this paper.

On April 14, 1954, the writer, with the assistance of Dr. Horton H. Hobbs, Jr., and Miss Jean E. Pugh, both of the University of Virginia, collected three larvae of *A. c. bishopi* from a roadside ditch in Newton County, Mississippi, 10.7 miles west of Chunky on U. S. Route 80. The larvae were seined from among unidentified dead aquatic plants in a ditch ten to thirty feet wide, approximately one hundred yards long, and six to twenty-four inches deep. The bottom was muddy, and the water was dark because of the presence of tannic acid. Thick grass and shrubbery border the ditch, and the surrounding terrain is fairly open pine flatwoods. This locality represents a range extension of approximately 180 miles northwest of Mobile County, Alabama, formerly the westernmost known locality for *A. cingulatum*.

The larvae were preserved in the field in five percent formalin, and color notes were taken about three hours later. A yellow-brown

ventro-lateral stripe extends from the posterior margin of the lower jaw to the region of the vent. Laterally, a similarly colored stripe runs from the base of the gills to the region of the vent, breaking up into a fairly close series of large yellow spots on the tail. There is a slightly lighter yellow-brown vertebral stripe extending from the head back along the base of the dorsal crest. The ventro-lateral, lateral, and vertebral stripes are separated by slightly wider black stripes. The dorso-lateral black stripes extend well back on the tail, but the sub-lateral black stripes break up in the region of the hind limbs. The ventral surface is dark grey, with a faint, narrow light line along the mid-ventral blood vessel. The ventral surface of the head is dark grey, well mottled with yellow-brown. The yellow-brown dorsal surface of the head is mottled in the center with dark brown. A broken stripe, dark grey in color, passes along the lower surface of the upper jaw, and a narrow, black band extends from the nostril posteriorly through the eye to the anterior base of the gills. The two lateral head stripes are separated by a wide, light yellow band. The dorsal crest of the tail fin is light yellow-brown with small, dark flecking anteriorly, which darkens to black distally. There are occasional light gold flecks along the anterior part of the dorsal crest. The ventral crest of the tail fin is black and only slightly mottled with yellow. The anterior and posterior limbs are dark grey, slightly banded with yellow-brown dorsally, and darkening to black on the feet. In life, the gills are bright red.

The lateral and ventro-lateral light stripes are slightly brighter than the other yellow-brown areas on the larva, but in general the larvae are far less colorful than the *Ambystoma c. cingulatum* larvae reported by Mecham and Hellman (*loc. cit.*). This may, of course, be due to the fact that the Mississippi larvae are 20 mm. to 30 mm. shorter than the Florida larvae, or to staining action of the tannic acid in the water. Measurements and other pertinent data on the three specimens are as follows:

For purposes of comparison, the same characters used by Mecham and Hellman (*op. cit.*: 131) were checked in these specimens. Only from specimen "A" were the third gill arches dissected out to determine the number of gill rakers. An attempt was also made on this specimen (the largest of the series) to count the larval vomerine teeth, but unfortunately an accurate count was impossible because of the small size of these teeth.

	A	B	C
Total length	51 mm.	43.5 mm.	47.5 mm.
Snout-vent length	24 mm.	22 mm.	23.5 mm.
Head length	8.5 mm.	9 mm.	9.5 mm.
Head width	7.5 mm.	7 mm.	7.5 mm.
Axilla-groin length	12 mm.	11 mm.	11.5 mm.
Gill rakers (anterior face, third arch)	6 - 7	-----	-----
Costal grooves (axilla to groin, all forks)	15 - 15	14 - 14	14 - 14

Mean ratios, determined from the above data, are presented in the table below along with comparative ratios for *A. c. cingulatum*, based on the data of Mecham and Hellman (*loc. cit.*). As may readily be seen, the two forms exhibit considerable differences in larval proportions. These results are minimized, however, by the relatively small numbers of specimens upon which they are based, and the notable size differences in the two series.

Characters	<i>A. c. cingulatum</i>	<i>A. c. bishopi</i>
Head length/snout-vent length363	.389
Head width/snout-vent length274	.314
Axilla-groin/snout-vent length516	.496
Head width/head length729	.816
Number of specimens	4	3

These larvae have been deposited in the writer's personal collection, and designated as SRT No. 889 A,B,C.

LITERATURE CITED

GOIN, COLEMAN J.

1950. A study of the salamander *Ambystoma cingulatum*, with the description of a new subspecies. *Ann. Carnegie Mus.*, 31(14): 299-321; pl. 1.

MECHAM, JOHN S., and ROBERT E. HELLMAN

1952. Notes on the larvae of two Florida salamanders. *Quart. Journal Florida Acad. Sci.*, 15: 127-133; pl. 2.

ORTON, GRACE L.

1942. Notes on the larvae of certain species of *Ambystoma*. *Copeia*, 1942(3): 170-172; 1 fig.